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20020052054 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France
Blowing Hot and Cold: Protecting Against Climatic Extremes

April 2002, 400p; In English, 8-10 Oct. 2001, Dresden, Germany; See also 20020052055 through 20020052095; CD-ROM contains full text document in PDF document; Original contains color illustrations

Report No.(s): RTO-MP-076; AC/323(HFM-061)TP/40; ISBN 92-837-1082-7; No Copyright; Avail: CASI; C01, CD-ROM; A17, Hardcopy; A04, Microfiche

Exposure to heat and cold, as well as the thermal stress induced by protective clothing strongly influences operational effectiveness of the soldier. On 8-10 October 2001, NATO and Partner for Peace nationals met in Dresden, Germany, to discuss the interaction between the climate, the clothing and equipment, and the physiology of the soldier in relation to its impact on the soldier's health and operational performance. One hundred eighteen people participated in the meeting, originating from 20 countries, attending a total of 43 papers. Session topics were: Advances in clothing technology, advanced technology for heat stress mitigation, military benefits of physiological adaptation to heat and cold, and modelling, monitoring and thermal limits. Apart from the military aspects, the spin-off of the research for civilians and emergency services was discussed and this was seen as an important application of the research findings. Other observed themes were: The sharply increased use of manikins in clothing and threat (steam, fire) evaluation; The successful development of personal cooling systems and the development of good evaluation methods; The use of spacer materials in heat protection, as well as for creating spacers in clothing through which air for active cooling can be provided; The continued development of NBC protective clothing towards minimal heat stress; The optimisation of heat and cold adaptation of soldiers before going on missions to respective areas; The increase in successful use of models for prediction of heat and cold stress, survival time (hypothermia), frost bite risk, water requirements, clothing thermal performance, and for hypothesis testing in terms of the thermoregulatory system; The development of new indices; for classification of physiological strain (heat and cold) and for the climate. In the discussions topics for future joint projects or meeting were defined: Thermoregulatory fatigue; An interlaboratory comparison of performance of dry and sweating thermal manikins; The creation of a (black-box) electronic climate analyser which would use sophisticated heat balance analyses or even physiological models to transform the climatic measurements of the device into a simple heat stress index for use in the field which eventually could replace WBGT instead of mimic it. The symposium provided an excellent overview of recent research and developments in the area and provided substantial food for thought and ideas for future work. Given the speed of development in this area, a follow up symposium on the same topic would be valuable in three to five years. Special topic meetings as suggested above, would be relevant before that date.

Author

Air Cooling; Conferences; Heat Acclimatization; Heat Tolerance; Physiological Responses; Physiology; Protective Clothing; Temperature Effects; thermal Protection; thermoregulation; Stress (Physiology)

20020053437 Research and Technology Organization, Applied Vehicle Technology Panel, Neuilly-sur-Seine, France
Performance Prediction and Simulation of Gas Turbine Engine Operation *La Prevision des Performances et la Simulation du Fonctionnement des Turbomoteurs*

April 2002, 356p; In English; CD-ROM contains full text document in PDF format

Report No.(s): RTO-TR-044; AC/323(AVT-018)TP/29; ISBN 92-837-1083-5; Copyright Waived; Avail: CASI; C01, CD-ROM; A16, Hardcopy; A03, Microfiche

A Technical Team of the NATO RTO has created a manual on aircraft gas turbine simulation, ranging from applications to latest methodology of modelling techniques. Application is from design to operation and maintenance. Twenty-two examples of models are reviewed, including educational examples and completed engine models. Present computer platforms in use for such models are reviewed, and an outlook on development is given. Executable models are included. On the theoretical side recent and advanced developments of the modelling of components are included. A survey of model users and a glossary are provided. The manual aims at increasing the use and the value of engine computer simulations in NATO Nations and NATO's design and use of engines.

Author

Computerized Simulation; Gas Turbine Engines; Performance Prediction; Aircraft Engines; Manuals

20020057871 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France
Human Factors in the 21st Century

May 2002, 230p; In English; In French, 11-13 Jun. 2001, Paris, France; See also 20020057872 through 20020057885; CD-ROM contains full text document in PDF format; Original contains color illustrations

Report No.(s): RTO-MP-077; AC/323(HFM-062)TP/38; ISBN 92-837-0021-X; Copyright Waived; Avail: CASI; C01, CD-ROM; A11, Hardcopy; A03, Microfiche

Representatives of NATO member nations, Partnership for Peace countries and non-NATO member nations met in Paris (Val de Grace Hospital) from 11 to 13 June 2001, for a Specialists Meeting on Human Factors problems in the 21st century. This meeting was particularly concerned with Human Factors problems which have appeared since what is known as the Revolution in Military Affairs (RMA) dating from the end of the Cold War. The meeting was held in parallel with a workshop on decision making in the 21st century from 13 to 15 June 2001, organized jointly by the DGA (The General Armaments Delegation of the French Ministry of Defence), the ONRIFO (Office of Naval Research Field Office) and the company THALES.

Author

Human Factors Engineering; Computerized Simulation; Weapon Systems; Military Operations; Air Traffic Control

20020057890 Research and Technology Organization, Modeling and Simulation Group, Neuilly-sur-Seine, France
NATO HLA Certification *Certification HLA OTAN*

June 2002, 54p; In English; CD-ROM contains full text document in PDF format; Original contains color illustrations

Report No.(s): RTO-TR-050; AC/323(NMSG-011)TP/03; ISBN 92-837-1087-8; Copyright Waived; Avail: CASI; C01, CD-ROM; A04, Hardcopy; A01, Microfiche

The Report from the NATO Modelling and Simulation Steering Group approved by the North-Atlantic Council establishes the need for a common (open standard) technical framework (CTF) to promote the interoperability and reuse of models and simulations across the Alliance. MSMP Sub-objective 1.1, 'Adopt the High Level Architecture (HLA)' as the NATO standard technical architecture for simulation applications, 'provides the best available technical architecture to satisfy this need. HLA is recognized as a critical and necessary enabler for the interoperability and reuse of simulations. There is a need to acquire some guarantee that so-called 'HLA-based' simulations are, in fact, HLA-compliant in accordance with applicable standards in order to attain those stages of interoperability and reuse. This report compares three different solutions to implement a NATO certification capability. The recommended solution is to establish national capabilities within voluntary nations. In order to co-ordinate and supervise this distributed implementation, it is required to establish a users/testers group to be created within the NMSG organization.

Author

North Atlantic Treaty Organization (NATO); Architecture (Computers); Computer Systems Simulation; Certification

20020057968 Research and Technology Organization, Sensors and Electronics Technology Panel, Neuilly-sur-Seine, France

Electromagnetic Compatibility in the Defense Systems of Future Years *La Compatibilite Electromagnetique des Systemes de Defense de l'Avenir*

June 2002, 108p; In English; CD-ROM contains full text document in PDF format

Report No.(s): RTO-TR-059; AC/323(SET-005)TP/22; ISBN 92-837-1084-3; Copyright Waived; Avail: CASI; C01, CD-ROM; A06, Hardcopy; A02, Microfiche

The study has focused on three areas of EMC design, development and qualification in future defense systems, namely: Numerical modeling, Test techniques, and Published standards. The limitations of existing techniques and standards have been examined and highlighted. Such limitations cause risks at the present time. However, the risks will increase as a result of changes in the commercial and technological environment and potential increases in risk as a result of these changes in the absence of research development, have been highlighted. Furthermore, recommendations on investment in research and development have been made in order to mitigate the increasing risks.

Author

Electromagnetic Compatibility; Mathematical Models; Defense Program; Avionics

20020059539 Research and Technology Organization, Neuilly-sur-Seine, France

RTO Technical Report: A Quarterly Listing *Quarterly Report, 1 Apr. - 30 Jun. 2002*

July 2002, 2p; In English

Report No.(s): RTO-02-02; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

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Author

Documents; Research and Development

20020068042 Research and Technology Organization, Neuilly-sur-Seine, France

RTO Technical Publications: A Quarterly Listing *Quarterly Report, 1 Apr. - 30 Jun. 2002*

July 2002, 2p; In English

Report No.(s): RTO-02-02; No Copyright; Avail: Issuing Activity

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Author

Information Dissemination; Bibliographies

20020070445 Research and Technology Organization, Information Systems Technology Panel, Neuilly-sur-Seine, France
Multimedia Visualization of Massive Military Datasets *Atelier OTAN sur la Visualisation Multimedia d'Ensembles Massifs de Donnees Militaires*

Multimedia Visualization of Massive Military Datasets; August 2002, 118p; In English, 6-9 Jun. 2000, Quebec, Canada; See also 20020070446 through 20020070472; CD-ROM contains full text document in PDF and PPS formats; Original contains color illustrations

Report No.(s): RTO-MP-050; AC/323(IST-020)TP/10; ISBN 92-837-1086-X; Copyright Waived; Avail: CASI; C01, CD-ROM; A06, Hardcopy; A02, Microfiche

The workshop on Multimedia Visualization of Massive Military Datasets was held at the Defence Research Establishment Valcartier, Quebec, Canada from 6-9 June 2000. Five major themes were addressed in 28 presentations with extended discussion, in separate sessions entitled: 1) Operations Visualization; 2) Visualization for Command; 3) Network Visualization; 4) Data Fusion; and 5) Maths and Techniques.

CASI

Multimedia; Scientific Visualization; Military Technology; Data Management; Multisensor Fusion; Software Engineering; Data Mining